

Representative Task Order 2 (RTO2):**New Mission integration (Hypothetical) (RTO2)****Background:**

Beginning in mid-2016, EOSDIS will be responsible for ingesting, archiving and distributing data and derived products from an international collaborative mission. EOSDIS will acquire and support data from two (hypothetical) major instruments on the same international spacecraft: A Moderate Resolution Land Sensor (MRLS) radiometer and an Advanced Laser Altimeter (ALA). The data from MRLS will be ingested, archived, managed and distributed by the Land Processes DAAC (LPDAAC). The ALA data will be ingested, archived, managed and distributed by the National Snow and Ice Data Center DAAC (NSIDC). The international partner will be responsible for data capture, and providing level 1 data from both instruments to the DAACs. Two science teams located in the US will be selected by NASA and will be responsible for producing higher level products (levels 2-4) from these level 1 data. The DAACs are responsible for the operations and interface with the international partner, the science teams and the interfaces with the users who will request and receive the data. The DAACs traditionally provide the science discipline interfaces to the customers for this data. Further information on the EOSDIS components and acronyms can be found on <http://earthdata.nasa.gov/> For the new mission, the existing science data processing system will be used to provide the DAACs the capabilities for ingest, archive, distribution, metadata and other components necessary to manage these new datasets at the DAACs. EOSDIS Infrastructure is already provided and includes the network, the firewalls, the configuration management system for all external interfaces (ICDs), and physical facility space at the DAACs. The EOSDIS software components for the science data processing system are available as described in the RFP (see RTO-1) and on the earthdata.nasa.gov website.

The following table shows the various parameters for the two instruments. The expected life of each of these instruments is 3 years. There will be a total of 20 distinct products (levels 1 through 4) from the MRLS. The expected total volume of these new MRLS products is approximately 5 TB per day.

Table 1. MRLS

Number of product types (levels 1-4)	20
Volume per day (TB) – Level 1	4
Volume per day (GB) – Browse products	120 images per day (10 per orbit) – 1.2 GB
Volume per day (TB) – Levels 2-4	1
Number of files (granules) added each day	5,000

There will be a total of 25 distinct products (levels 1 through 4) from the ALA. The expected total volume of these new ALA products is approximately 4 TB per day.

Table 2. ALA Altimeter

Number of product types (levels 1-4)	25
Volume per day (TB) – Level 1	3
Volume per day (TB) – Levels 2-4	1
Number of files (granules) added each day	400

The data from the international partner will arrive as a continuous stream as they are captured and level 1 data are generated at the international site. The science teams are responsible for processing the Level 1 data into higher level derived products continuously, so that there is no processing backlog. Also, science teams carry out reprocessing campaigns during the mission life, starting at 'launch plus 2 years.' The reprocessing occurs in parallel with forward processing. Reprocessing of all the data from the start of the mission until the start of the reprocessing campaign will be completed within one year. All negotiations between the International partners and the science teams for the data are negotiated by NASA and will be provided to the contractor in an Interface Control Document. Specific elements are numbered below for ease of tracking task order requirements.

Work to be Performed:

RTO2.1 The contractor is responsible for providing to the DAACs the capabilities for ingest, archive, distribution, metadata and other components necessary to manage these new datasets at the DAACs. The work to be performed will commence April 1, 2016 and completed on March 30, 2020. Launch is expected on April 1, 2017. First data will arrive at the DAAC on October 1, 2017. The 3-year mission will complete on March 30, 2020. The contractor must plan for all activities to prepare for the acquisition of the data from the new mission, any reprocessed data, and additional products. The contractor must execute the plan following approval at successful review meetings.

RTO2.1.1 The contractor shall plan full data lifecycle support. The contractor shall support the integration of the new instruments' data into EOSDIS such that the full suite of EOSDIS capabilities is available to support the new datasets. The contractor shall provide capabilities to ingest and archive all data and derived products without creating a backlog in any of the systems. A backlog is described as a situation where more than one week's worth of uncompleted data ingest, archive and distribution is pending. The capability to archive both the ongoing, forward processed data and the reprocessed data shall be provided under the established Sustaining Engineering Task Order (RTO-1). Using the existing software system and computing baseline, the contractor shall deliver increased server and storage capacity on a schedule commensurate with storage needs over the life of the mission.

RTO2.1.2 The contractor's approach shall ensure the archived data is searchable and orderable using the ECHO/Reverb capabilities, as a minimum. Browse data shall be provided separate to this task via the Global Image Browse System on a daily basis. <https://earthdata.nasa.gov/data/near-real-time-data/visualization/gibs>. The contractor may consider using browse data as part of a solution to enabling search and order of the new mission's datasets.

RTO2.1.3 The contractor's approach shall ensure the production of required metrics describing the ingest, archive and user data access, and export to the EOSDIS Metrics System. The metrics system and

its analytics are described in <https://earthdata.nasa.gov/about-eosdis/system-description/esdis-metrics-system-ems>

RTO2.1.4 The contractor shall be responsible for managing the task, including configuration management, tool development; defining a methodology for measuring progress and providing appropriate performance metrics; approach to defect management; and overall resource management.

RTO2.1.5 The contractor shall deliver a task plan that fully describes the technical approach for completing this work, and including a schedule and estimated cost for the integration and operational support of the new data sets. This plan shall include descriptions of the design approach for integrating new data sets into the EOSDIS Core System (or alternative, if proposed), an approach for providing metadata to the EOSDIS ClearingHUse (ECHO) system, an approach for providing image browse products, where available, to the Global Image Browse System, proposed improvements to DAAC or Reverb user interfaces to enhance access to the new mission datasets; describe requirements for new computing hardware necessary to augment existing system, and the approach to installing new computing hardware systems with minimal disruption to operations..